Infection Prevention & Control
Annual Report

2009-2010
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Executive Summary

This report provides information on the progress and achievements of the PHSA Infection Prevention and Control Service (PIPCS) between April 1, 2009 and March 31st 2010.

Highlights

1. Site specific

**BC Cancer Agency (Vancouver Centre) – Inpatient Unit:** The overall Hand Hygiene (HH) compliance in the inpatient unit was 61.4%. There was 1 HA-VRE case and no identified HA-MRSA. There were 10 cases of HA- *C. difficile* infections which was a significant increase compared to last year. A number of interventions have been implemented and rates appear to have returned to previous levels. There were 7 catheter-related blood stream infections (CR-BSI). We have no previous rates to compare to as this is the first year we report CR-BSI. Infection control reviewed the Central Line Maintenance Protocols at BCCA and found them compliant with Safer Healthcare Now Central Line Maintenance Bundle.

**BC Women’s Hospital & Health Centre:** The overall HH compliance was 67.2%. There were 1 identified HA- *C. difficile* infection, no HA-MRSA or VRE cases at the Women’s Hospital during this fiscal year. HA- surgical site infection rate after Cesarean section remains low and stable at 0.27% per total number of Cesarean sections performed. This is well below the national average.

**BC Children’s Hospital:** The overall HH compliance was 63.4%. There were 6 HA-MRSA cases this year. Compared to previous years, the incidence of HA-MRSA has decreased significantly. This decline is likely related to improved and standardized surveillance practices. There were 33 HA- *C. difficile* infections which represents an 82% increase compared to last year. Improved and standardized surveillance methodology may have contributed to this increase. A number of interventions have been implemented and we will continue to monitor closely. HA- surgical site infection and bloodstream infection rates have remained low and stable this fiscal year. No HA-VRE infections were identified at BC Children’s Hospital.

2. General

**Outbreaks:** There was one Norovirus outbreak at the Aurora Centre at BC Women’s Hospital & Health Centre. There were four respiratory outbreaks at Riverview Hospital. Two were confirmed as human Metapneumovirus. No causative organism was identified in the remaining two. Identification and implementation of infection control measures occurred in a timely fashion for all outbreaks. There were no other outbreaks identified at any of the PHSA institutions.

**Surveillance:** We are constantly improving our surveillance system, including working toward standardized definitions and implementing data quality control and assurance procedures and enhancing education for the IC practitioners who are collecting the data. We are also improving the dissemination of data by standardization and regular reporting to promote evidence based infection prevention and control. Our infection control epidemiologist as an integral part of PIPPCS, interacts internally with all PHSA IC practitioners, IMIT and decision support services, and also with the Canadian Nosocomial Surveillance Network (CNISP) and the Provincial Infection Control Network (PICNet). She participates in reviewing data collection practices, data management, analysis and reporting.
Hand Hygiene Campaign: Our PHSA-wide Hand Hygiene Campaign (Stop the Spread), in place at BC Children’s and BC Women’s since 2008, was launched at all BCCA Centres across B.C. in 2009. We have created an audit tool for HH compliance based on World Health Organization (WHO) guidelines. HH hygiene compliance report cards are presented to the units, the QA Committees and to the Corporate Director of Medical Affairs and Quality and Risk Management on a regular basis. We are working on engaging the staff at all units and wish to provide more input from patients and families.

Reprocessing of Medical Equipments: The Infection Control Reprocessing Manager continues to fulfill the obligations for the MOH mandated audits, for reprocessing of critical and semi critical items across PHSA. She provides ongoing support to all PHSA sterile processing (SPD) areas in the form of audits, education, standardization and protocol development. Her work ensures that proper and timely information about PHSA sterile processing standards and activities are provided to PHSA leaders and to government.

New Additions: New additions to the team of Infection Control Practitioners include:

Louise Holmes – C&W Coordinator brings with her a wealth of infection control knowledge and experience, both from the hospital and the public health perspective.

Kyla McKendry – New ICP at BCCA - VIC brings experience in community communicable disease nursing.

We look forward to another exciting and challenging year as we continue to enhance surveillance, outbreak management, construction related protocols, policy development, audits, education, training and quality improvement strategies.

This is our third annual PIPCS report, detailing what we have achieved and what we plan to do in the future. I would like to thank Georgene Miller, Chief Quality, Safety and Medical Affairs Administrative Officer, for her excellent support and leadership.

Eva Thomas, M.D, PhD, FRCP(C)
Medical Microbiologist
Corporate Director, PHSA Infection Prevention and Control

Ghada Al-Rawahi, M.D., FRCP(C)
Medical Microbiologist
Infection Control Officer, BCCA
# Executive Summary of Key HAI Indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Status</th>
<th>Trend</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hand Hygiene Compliance Rate</td>
<td>▲</td>
<td>▲</td>
<td>70%</td>
</tr>
<tr>
<td><em>Clostridium difficile</em> Infection (CDI) Incidence Rate</td>
<td>▲</td>
<td>▼</td>
<td>0%</td>
</tr>
<tr>
<td>Methicillin-resistant <em>Staphylococcus aureus</em> (MRSA) Incidence Rate</td>
<td>▲</td>
<td>➔</td>
<td>0%</td>
</tr>
<tr>
<td>Vancomycin-Resistant Enterococci (VRE) Incidence Rate</td>
<td>▲</td>
<td>➔</td>
<td>0%</td>
</tr>
</tbody>
</table>

**Note:** Actual rates are reported separately in this document

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1. **Status**
   - ● = achieving target, ▲ = does not meet target, but improving with (steady trend arrow), ▼ = not improving and is deteriorating (steady or deteriorating arrow)

2. **Trend**
   - ▲ = improving; at least 4 consecutive data points moving towards target, ▼ = deteriorating; at least 4 consecutive data points moving away from target, ➔ = steady; fewer than 4 consecutive data points moving in either direction
**Program**

**Mandate:** In 2006 organizational structure was modified to bring the PHSA Infection Prevention and Control service (PIPCS) under the portfolio of the VP Quality and Safety. This has enabled PHSA to reorganize and strengthen institution specific and PHSA wide infection prevention and control services, which ensured a safe environment for patients throughout PHSA. PIPCS collaborates with other health authorities, Provincial Infection Control Network of B.C. (PICNet) and Public Health to promote standardization of guidelines and surveillance scope.

**Program Structure as of June 2010:**

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**Provincial Health Services Authority**

2009-2010 Infection Prevention & Control Annual Report
Team Members

Leadership

Chief Quality, Safety and Medical Affairs Administrative Officer
- Georgene Miller

PIPCS Program Director
- Eva Thomas, Corporate Director PIPCS

Associate Director
- Simon Dobson, MD

BCCA Infection Control Officer
- Dr. Ghada Al-Rawahi (0.5 FTE)

On-call Medical Infection Control Coverage
- Dr Peter Tilley (Medical Microbiology)
- Dr Rusung Tan (Medical Microbiology)
- Dr Eva Thomas (Medical Microbiology)
- Dr Ghada Al-Rawahi (Medical Microbiology)
- Dr Simon Dobson (Pediatric Infectious Disease)

Infection Control Practitioners

Coordinators
- Robyn Hunter, PHSA IC Coordinator (1 FTE)
- Louise Holmes, C&W IC Coordinator (1 FTE)

BC Children’s Hospital and BC Women’s Hospital & Health Centre
- Rita DeKleer (0.7 FTE)
- Bonnie Anderson (1 FTE)
- Marney Hunt (0.85 FTE)

BC Cancer Agency
- Alison Chant (1 FTE)
- Kimberly Peel (1 FTE)
- Laurel Nicholson (0.4 FTE)
- Kyla McKendry (0.5 FTE)
- Nicki Gill (0.2 FTE)

Riverview Hospital
- Ron Morley (1 FTE)
- Andrea McQuilling (0.5 FTE)
- Iona Joseph (0.5 FTE)
PHSA Infection Control Epidemiologist
  ▪ Jun Chen Collet (1 FTE)

PHSA Infection Control SPD Reprocessing Manager
  ▪ Viola Tang (1 FTE)

PHSA HH Auditor
  ▪ Maja Horgas (1 FTE)
Activity Highlights

“Stop the Spread” Hand Hygiene (HH) Campaign
- Launched at BCCA five centres
- Regular HH audits introduced
- Document for public reporting of HH compliance submitted to PHSA leadership
- Work with PHSA leaders at BCCA and C&W to spread “importance of HH” message
- Public posting of HH audit results on units
- Review and standardization of HH audits (frequency and #of observations)
- Education sessions standardized
- Schedule for reporting of HH results to leadership
- Launch date for BCCDC April 13, 2010
- Launch date for Riverview and Forensic June, 2010

H1N1 (April-December 2009)
Comprehensive Pandemic Planning throughout the summer & fall of 2009
- Frequent meetings with Emergency Management (both local and PHSA wide)
- PHSA and C&W and BCCA EOCs activated
- Frequent Meetings with Employee Wellness
- Pandemic PPE stock estimates and calculations
- Increase of laboratory testing
- Fit testing Clinics
- Vaccination program
- Weekly C&W epidemiology reports (attach example)
- Work with C&W medical leaders to make sure that ER, labour and delivery and PICU were safe and equipped
- Continuing liaison with Public Health Officials and BCCDC

Sterile Processing
- MOH audits finalized
- Extended support for C&W SPD provided by Viola Tang
- Development of Education Material
- Ongoing service to all PHSA SPD areas
- Ongoing audits
- Outreach audits of peripheral BCCA Clinics finalized
Work underway

- Enhanced HH teaching materials
- Standardized surveillance protocols
- Standardized data collection forms
- *C. difficile* database built
- MRSA data base
- Update of C&W IC manual and practices
- Revision of BCCA IC manual
- Review and standardization of isolation precautions at C&W
Medical Device Reprocessing Audits

- In 2007, the Ministry of Health Services mandated an audit across all health authorities for all critical and semi-critical medical devices being reprocessed. Reprocessing includes all steps necessary to prepare a device ready for use on another patient (i.e., cleaning, disinfecting, sterilizing).
- The MOH audit of medical device reprocessing is designed to improve patient safety through adoption of best practices for cleaning, disinfection and sterilization of medical devices.
- The policy applies to all single use and multiple use devices and patient care equipment used within health authority facilities and programs.
- The original audit for PHSA was done in 2007, with subsequent audits conducted in 2009 and 2010.
- The audits were conducted at BCCA, BC Children’s and BC Women’s, and Riverview Hospital.
- The audit tool is adapted from the MOH.

Compliance Summary: The audits in 2009 and 2010 have shown that overall compliance is improving across all areas, reaching 99-100% in the Sterile Processing Departments of BC Cancer Agency, BC Children’s and BC Women’s, and Riverview.

<table>
<thead>
<tr>
<th>Audit Section Description</th>
<th>2007</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Single use items</td>
<td>96%</td>
<td>90%</td>
<td>100%</td>
</tr>
<tr>
<td>2 Reusable items</td>
<td>N/A</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>3 Indications sterilization or HLD</td>
<td>98%</td>
<td>95%</td>
<td>100%</td>
</tr>
<tr>
<td>4 General</td>
<td>59%</td>
<td>84%</td>
<td>95%</td>
</tr>
<tr>
<td>4a Detergents</td>
<td>N/A</td>
<td>65%</td>
<td>93%</td>
</tr>
<tr>
<td>4b Medical device and equipment</td>
<td>N/A</td>
<td>90%</td>
<td>95%</td>
</tr>
<tr>
<td>5 Cleaning</td>
<td>78%</td>
<td>79%</td>
<td>96%</td>
</tr>
<tr>
<td>6 Chemical HLD, no endoscopes</td>
<td>58%</td>
<td>69%</td>
<td>92%</td>
</tr>
<tr>
<td>6a Documentation (Chemical HLD, no endoscopes)</td>
<td>N/A</td>
<td>19%</td>
<td>89%</td>
</tr>
<tr>
<td>7 Pasteurization</td>
<td>97%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>8 Sterilization</td>
<td>74%</td>
<td>91%</td>
<td>98%</td>
</tr>
<tr>
<td>8a Flash sterilization</td>
<td>59%</td>
<td>80%</td>
<td>88%</td>
</tr>
<tr>
<td>8b Steris System 1</td>
<td>98%</td>
<td>97%</td>
<td>96%</td>
</tr>
</tbody>
</table>
### Audit Section Description

<table>
<thead>
<tr>
<th>Audit Section Description</th>
<th>2007</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 Purchasing &amp; reprocessing instruction</td>
<td>53%</td>
<td>98%</td>
<td>100%</td>
</tr>
<tr>
<td>10 Education</td>
<td>67%</td>
<td>55%</td>
<td>90%</td>
</tr>
<tr>
<td>11 Home care</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>12 Dental clinic</td>
<td>N/A</td>
<td>68%</td>
<td>100%</td>
</tr>
<tr>
<td>13 HLD flexible endoscope</td>
<td>83%</td>
<td>85%</td>
<td>92%</td>
</tr>
<tr>
<td>13a HLD flexible endoscope – cleaning</td>
<td>97%</td>
<td>85%</td>
<td>98%</td>
</tr>
<tr>
<td>13b HLD manual disinfection</td>
<td>59%</td>
<td>70%</td>
<td>N/A</td>
</tr>
<tr>
<td>13c HLD automated disinfection</td>
<td>90%</td>
<td>97%</td>
<td>100%</td>
</tr>
<tr>
<td>13d Endoscopes storage</td>
<td>54%</td>
<td>53%</td>
<td>73%</td>
</tr>
<tr>
<td>13e Documentation (HLD flexible endoscope)</td>
<td>76%</td>
<td>56%</td>
<td>96%</td>
</tr>
<tr>
<td><strong>Total PHSA compliance</strong></td>
<td><strong>69%</strong></td>
<td><strong>76%</strong></td>
<td><strong>94%</strong></td>
</tr>
</tbody>
</table>

- The PHSA is committed to the highest standards of patient safety and information gathered through this review provides us with a comprehensive practice audit and gap analysis of reprocessing practices that will guide us to make improvements in the safety and quality of care provided to patients throughout PHSA.
- PHSA has taken other corrective measures as a result of the audit, including implementing a manager for reprocessing practices who is responsible for providing professional practice leadership to PHSA agencies, ensuring consistent and standardized reprocessing policies and procedures throughout PHSA, and coordinating and reporting on annual Ministry of Health Services Infection Control audits.
- PHSA has developed a Reprocessing Quality Assurance Plan to ensure quality processing services are delivered in a safe, effective, and efficient manner across PHSA and that the services are delivered according to the standards set by the Ministry of Health Services and the Canadian Standards Association.
- Staff education campaign has been launched across BCCA.
- Reprocessing of flexible scopes in BCCA Community Oncology Outreach Clinic in Northern Health Authority is now performed by the host facility except in Terrace.
- Flexible scopes will be provided by the host facility for examination in BCCA Community Oncology Outreach Clinic in Interior Kootenay Clinics.
Pandemic H1N1 Activities (April-December 2009)

From April 29, 2009 to November 21, 2009, there are total 364 laboratory confirmed pandemic H1N1 (pH1N1) cases identified at C&W. 116 (30%) required hospitalization and other 248 (68%) of these cases were seen in emergency departments or outpatient clinics.

During the pandemic period, the infection control team continuously strives to provide C&W staffs with relevant educational resources, such as the infection control precautionary measures regarding respiratory illness, pandemic information brochures; provide consultations on a daily basis to address patient-, procedure- or unit-specific concerns; enhance ward visits and promote hand hygiene awareness and practice.

In addition, PHSA Infection Prevention and Control Service PIPCS in collaborating with BC Children’s and BC Women’s laboratory and Decision Support Unit, have produced a weekly pH1N1 surveillance report to various stakeholders at C&W to assist their pandemic situation assessing and policy making.
## Hand Hygiene (HH) Compliance Rates

<table>
<thead>
<tr>
<th>Status</th>
<th>Trend</th>
<th>Target</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>▲</td>
<td>↑</td>
<td>70%</td>
<td>Actual result reported on an annual basis</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Site</th>
<th>Audit No. 1 completed October 2009</th>
<th>Audit No. 2 completed March 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BC Children’s Hospital</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall Compliance</td>
<td>46.3 %</td>
<td>63.4 %</td>
</tr>
<tr>
<td>Total time for audit</td>
<td>4450 min</td>
<td>3610 min</td>
</tr>
<tr>
<td><strong>BC Women’s Hospital &amp; Health Centre</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall Compliance</td>
<td>50.3 %</td>
<td>67.2 %</td>
</tr>
<tr>
<td>Total time for audit</td>
<td>5871 min</td>
<td>4412 min</td>
</tr>
<tr>
<td><strong>BC Cancer Agency</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall Compliance</td>
<td>45.7 %</td>
<td>61.4 %</td>
</tr>
<tr>
<td>Total time for audit</td>
<td>8777 min</td>
<td>7982 min</td>
</tr>
</tbody>
</table>

**Measure:** PHSA is posting its HH compliance rates as percentages for specific observation time periods using the following formula:

\[
\text{HH compliance rate} = \frac{\text{# of times HH performed (includes rub and wash)}}{\text{# of observed hand hygiene opportunities}} \times 100
\]

Auditors collect at least 200 opportunities for every unit observed (this includes inpatient and outpatient settings, direct care providers as well as ancillary staff). For each site, the individual unit results are combined and an overall site average.

**Methodology:** The PHSA HH program was adapted mostly from the Canadian Patient Safety Institute which is also the same program that Safer Health Care Now uses. They are all based on the WHO’s Global Patient Safety Challenge “Clean Care is Safer Care” that was launched in 2005. The main difference is that most of Canada (including PHSA) uses 4 moments of hand hygiene, having combined after patient and after environment contact. HH compliance is measured using an audit tool, modified from the CPSI.

**Limitations:** One auditor covered all PHSA institutions and not all units could be audited and re-audited in a timely manner. Some units have patient rooms with windowless doors. These
opportunities would be missed entirely. The mere presence of the auditor may increase compliance.

**Benchmarks and Comparators**: From an organizational point of view, the safety of our patients and health care workers is always a priority. That is why we have implemented our “Stop the Spread Wash your Hands” Campaign to increase hand hygiene compliance throughout PHSA. We know that our initial HH compliance rates were consistent with what the majority of Canadian acute care hospitals found when initiating such programs. Our second audit indicates that we have improved since the start of our campaign, but we can do even better. We know the power to make a difference is in our hands. We know that health care associated infections cause 8,000 to 12,000 deaths in Canada each year and we also know that 50% of health care infections can be prevented. Good HH is a key strategy to reduce these infections and save lives.

**Annual Target**: Increase by 5% over last year’s actual hand hygiene compliance rate.

**Trend**: PHSA over all hand hygiene compliance has improved by 15% since last year

**Actions taken**: The audits have been done on a regular basis, fairly frequent at some of the inpatient units at BC Children’s and BC Women’s (about every 3-4 months). They have been done at the BCCA on the inpatient unit and at the radiology and oncology clinics at the Vancouver centre, Kelowna, Abbotsford, Fraser Valley, Victoria. They have been done at the BCCDC in both the TB clinics and STI clinic and also at the NW site. We are currently looking at how frequently we can maintain the audits, based on our resources and number of units. We have developed posters that are displayed on each of the units that have been audited that will show their HH rates in comparison to the entire hospital. We had also developed a communication about our hand hygiene program that was to be posted to the internet for the public with an overall rate of HH compliance for all our facilities.
**Clostridium difficile Infections (CDI) Incidence Rate**

<table>
<thead>
<tr>
<th>HAI Status</th>
<th>HAI Trend</th>
<th>HAI Target</th>
<th>HAI Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>↓</td>
<td>0%</td>
<td>Actual result reported on an annual basis</td>
</tr>
</tbody>
</table>

**BC Cancer Agency Inpatient Unit (Vancouver Centre)**

**Health Care Associated (HA) CDI**
There were 10 cases of HA- *C. difficile* infections which was a significant increase compared to last year. A number of interventions have been implemented and rates appear to have returned to previous levels.

**CDI (Total)**
Laboratory Based Surveillance of CDI showed a total of 15 inpatient cases for an overall rate of 2.02 per 1,000 patient days. This has increased since last year. In August, there were 2 cases acquired due to nosocomial transmission. A number of interventions have been implemented and rates appear to have returned to previous levels. We will continue with emphasis on hand hygiene and using routine practices as always. Among patients with CDI, 60% were females and the age range was 19-70s years. There were no mortalities attributed to CDI.

**BCCA VCC-Inpatient**

![Bar chart showing rate per 1,000 patient days for C. difficile infections from April to March.](chart.png)
BC Children’s Hospital and BC Women’s Hospital & Health Centre

In 2009/10, 41 cases of CDI were identified at BC Children’s (39 cases) and BC Women’s (2 cases). 33 (80%) of these were classified as Healthcare-Associated, corresponding to an incidence rate of 0.69 cases/1000 patient days. This represents an 82% increase in the rate of HA-CDI compared to last year. Improved surveillance and standardized processes for data collection might contribute to this apparent increase in HA-CDI rate. We will continue to closely monitor this trend to verify.

<table>
<thead>
<tr>
<th>Fiscal year</th>
<th># of Healthcare Associated (HA)- CDI Cases</th>
<th>In-Patient Days ¹</th>
<th>Incidence Rate (per 1000 patient days)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005/2006</td>
<td>26</td>
<td>50,580</td>
<td>0.51</td>
</tr>
<tr>
<td>2006/2007</td>
<td>14</td>
<td>52,240</td>
<td>0.27</td>
</tr>
<tr>
<td>2007/2008</td>
<td>21</td>
<td>51,572</td>
<td>0.41</td>
</tr>
<tr>
<td>2008/2009</td>
<td>19</td>
<td>49,650</td>
<td>0.38</td>
</tr>
<tr>
<td>2009/2010</td>
<td>33²</td>
<td>48,088</td>
<td>0.69</td>
</tr>
</tbody>
</table>

¹ Patients in psychiatric beds or patients less than one year of age were excluded in the calculation of in-patient days.
² These 33 cases included 7 re-infections (appendix D)
MRSA is an antibiotic resistant bacterium that can be transmitted in health care settings. This may result in colonization of patients or true infection.

**BC Cancer Agency Inpatient Unit (Vancouver Centre)**

**Health Care Associated (HA) MRSA Infections**

There were no HA-MRSA infections this fiscal year

**MRSA (Total)**

A total of 10 MRSA cases were admitted with an overall rate of 3.09 per 1,000 patient days. 2 were positive from clinical isolates and 8 were identified through admission screening as colonization cases. Admission screening is an important tool implemented in the inpatient unit in August, 2008 for early identification and prompt isolation of cases. Among these patients, 60% were males and the age range was 49-75 years.
BC Children’s Hospital and BC Women’s Hospital & Health Centre

In 2009/10, 135 new MRSA patients were identified at BC Children’s and BC Women’s. Of these, 79/135 (59%) patients were seen in outpatient clinics or emergency departments and were not admitted to our facilities. Fifty six of 135 patients were admitted. Of those 38/56 patients were admitted to BC Children’s and 15/56 patients were admitted to BC Women’s. Only 6 patients (16%) were considered new healthcare-associated MRSA cases, corresponding to an overall incidence rate of 0.07 cases/1000 patient days.

Compared to previous years, the incidence of HA-MRSA has significantly decreased despite ongoing community transmission of MRSA. The decline is likely related to improved infection control awareness, enhanced Hand Hygiene practices among health care professionals as well as improved surveillance and standardized processes for data collection.

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th># of Healthcare Associated (HA)-MRSA Cases</th>
<th>In-Patient Days</th>
<th>Incidence Rate (per 1,000 patient days)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006/07</td>
<td>18</td>
<td>95,729</td>
<td>0.19</td>
</tr>
<tr>
<td>2007/08</td>
<td>23</td>
<td>95,344</td>
<td>0.24</td>
</tr>
<tr>
<td>2008/09</td>
<td>19</td>
<td>88,383</td>
<td>0.23</td>
</tr>
<tr>
<td>2009/10</td>
<td>6²</td>
<td>88,491</td>
<td>0.07</td>
</tr>
</tbody>
</table>

¹ Patients in psychiatric beds were excluded in the calculation of in-patient days.
² This may not represent a true decrease in HA-MRSA case as more rigorous definitions of HA-MRSA were employed.
Vancomycin-Resistant Enterococci (VRE) Incidence Rate

<table>
<thead>
<tr>
<th>HAI Status</th>
<th>HAI Trend</th>
<th>HAI Target</th>
<th>HAI Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>▲</td>
<td>→</td>
<td>0%</td>
<td>Actual result reported on an annual basis</td>
</tr>
</tbody>
</table>

VRE refers to strains of enterococci that are resistant to vancomycin, making them difficult to treat.

**BC Cancer Agency Inpatient Unit (Vancouver Centre)**

**Health Care Associated (HA) VRE Infections**

During the 2009-2010 fiscal year there was one case of HA-VRE infection.

**VRE (Total)**

A total of 17 VRE cases were admitted with an overall rate of 2.02 per 1,000 patient days. 94% (11/17) were identified through admission screening as colonization cases and only 1 patient had urinary tract infection. Among these patients, 53% were females and the age range was 24-87 years.

**BC Children’s Hospital and BC Women’s Hospital & Health Centre**

Three patients with VRE were detected this fiscal year; none of these were healthcare associated.
BC Women’s Hospital: HA-Surgical Site Infections – Cesarean Sections

Effectiveness

<table>
<thead>
<tr>
<th>Status</th>
<th>Trend</th>
<th>Target</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>↑</td>
<td>0%</td>
<td>0.27%</td>
</tr>
</tbody>
</table>

Healthcare Associated Surgical Site Infections (SSI) – C-Sections

C-Section Infection Rate

Measure:
Number of healthcare associated C-section Surgical Site Infections as a percentage of total C-sections performed. This includes patients readmitted with surgical site infections based on the current surgical site definition and including Superficial Incisional SSI, Deep Incisional SSI and Organ/Space SSI – see definition details below.

Limitations:
Healthcare associated infections usually occur 48 hours or more after admission. Because incubation periods vary with the type of pathogen and, to some extent, with patients' underlying conditions, each infection must be assessed individually for evidence linking it with the hospitalization.
Some infections may be missed if they develop after discharge and the patient does not return to our facility for treatment (e.g., if they are admitted to a hospital in their own community).
This indicator does not take clinical risk factors into account, such as patient condition prior to surgical intervention.

Drivers:
Surgical preparation protocols, aseptic technique, disinfection/sterilization, and risk factors. BCW has an infection control surveillance program in place, a pre-operative protocol for the administration of prophylactic antibiotics, and a guideline for low risk skin preparation (clipping of hair if necessary and no shaving of the operative site).
Healthcare Associated Surgical Site Infections (SSI) – C-Sections

PHSA Target: 0%

Benchmarks and Comparators: Benchmarking data available through the professional literature indicates a reduction in the C-section infection rate following the introduction of infection control surveillance programs and the standard use of prophylactic antibiotics prior to surgery. Rates of 2.4% to 4% that existed in the literature prior to 2004 are now in the 1.6 to 1.9% range. Additional comparative rates are available through the CIHI DAD portal and list infection rates between 0.33% and 2.4%.

Trend: There have been two or fewer infections related to C-sections per period for the last 39 periods. The rate for the current reporting period decreased from 0.29% to 0.27%. The rate remains low.

Comments: Rate remains low

Action Taken: No action required.

Relevance: Surgical site wound infections are an example of a serious, (possibly) preventable, post-operative complication. They may contribute to patient mortality, morbidity, and excess length of stay.
BC Children’s Hospital Inpatients: HA-Surgical Site Infections

Updated: May, 2010

<table>
<thead>
<tr>
<th>Status</th>
<th>Trend</th>
<th>Target</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>0%</td>
<td>FY 09/10 0.37%</td>
</tr>
</tbody>
</table>

Healthcare-Associated Surgical Site Infections – BC Children’s Hospital Inpatients

Rate of CH Healthcare Associated Surgical Site Infections

Measure: Number of pediatric inpatients with SSI during their hospital admission as a percentage of the total number of surgical episodes. This includes patients readmitted with surgical site infections based on the current surgical site definition and including Superficial Incisional SSI, Deep Incisional SSI and Organ/Space SSI – see definition below.

As of November 2007, the control limit has been tightened to 1 sigma (1SD) for this indicator due to the well-controlled rate.

Limitations: No post discharge surveillance.

Drivers: Skin preparation protocols, aseptic technique, disinfection/sterilization, and other risk factors.

PHSA Target: 0%
**Healthcare-Associated Surgical Site Infections – BC Children’s Hospital Inpatients**

**Benchmarks and Comparators:** Benchmarking of nosocomial infections was discussed with other Pediatric hospitals and each hospital reports differently. Children’s Hospital will benchmark its own data over time as per Infection Control.

**Trend:** Surgical site infection rate remained within the 1SD upper control limits in FY 09/10 except in FP 9 & 10 (5 infections, 0.88% & 4 infections, 0.95% respectively). The overall BCCH’s surgical site infection rate for FY 04/05 was 0.47%, for FY 05/06 was 0.37%, for FY 06/07 was 0.2%, for FY 07/08 the rate was 0.37%, and for FY 08/09 was 0.44%. Updated, May, 2010

**Comments:** The rate remains low.

**Action Taken:** Infection Control continues to monitor closely.

**Relevance:** Surgical site wound infections are an example of a serious, potentially preventable postoperative complication. They may contribute to patient mortality, morbidity, and excess length of stay. By focusing on the processes of care that may contribute to the postoperative surgical site infection rate, it may be possible to realize a reduction in treatment costs and an improvement in the quality of care.
BC Children’s Hospital Inpatients: HA-Bloodstream Infections & Catheter-Related Bloodstream Infections

Updated: May, 2010

<table>
<thead>
<tr>
<th>Status</th>
<th>Trend</th>
<th>Target</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>▲</td>
<td>↑</td>
<td>0%</td>
<td>FY 09/10 1.42 /1000 patient days</td>
</tr>
</tbody>
</table>

BCCH Healthcare Associated Blood Stream Infections

Measure:
Number of pediatric inpatients with healthcare-related bloodstream infections occurring > 48 hours after admission, as a rate per 1,000 CH inpatient days. As of November 2007, the control limit has been tightened to 1 sigma (1SD) for this indicator due to the well-controlled rate. This report includes information on both: Bloodstream infections (BSI) and Catheter-Related Bloodstream infections (CR-BSI).

See below for definition.

Limitations:
No post discharge surveillance.

Drivers:
Skin preparation protocols, aseptic technique, disinfection/sterilization, and risk factors.

PHSA Target: 0%

Benchmarks
Benchmarking of healthcare-related Infections was discussed with other...
Comparators: Pediatric hospitals and each hospital reports differently. Children’s Hospital will benchmark its own data over time as per Infection Control Service.

Trend: Healthcare associated bloodstream infection rate remained within the tight control of 1 SD in FQ 4, 09/10 except in FP 10 as there was 6 infections reported (rate 2.59 per 1000 patient days). The rate for FY 09/10 was 1.42 per 1,000 patient days. The rate for FY 03/04 was 2.57, for FY 04/05 was 2.99, for FY 05/06 was 2.54, for FY 06/07 was 1.41, for FY 07/08 was 1.76, and for FY 2008/09 was 1.44 per 1,000 patient days. When small number of infections (0-2 infections) occurs in a fiscal period, the point representing the total rate is shown below the lower control limit. Updated, May 3, 2010

Comments: The rate remains low.

Action Taken: Infection Control continues to monitor closely.

Relevance: Healthcare-related infection is an example of a serious, potentially preventable complication. It may contribute to patient mortality, morbidity, and excess length of stay. This indicator will give up-to-date information on healthcare-related infection rates and timely identification of outbreaks.
A total of 18 patients with central venous catheters had positive blood cultures. 11 were excluded from the overall rate due to other obvious foci of infection resulting in 7 CR-BSIs. Pathogens reported were: \textit{S. aureus}, \textit{Candida albicans}, \textit{Enterococcus faecalis}, \textit{Acinetobacter lwoffii}, \textit{Serratia marcescens}, \textit{Fusobacterium nucleatum}, and \textit{Mycobacterium fortuitum}. 4 central lines were Port-a-cath lines and the remainder were Hickmann-Broviac tunneled catheters. 57\% (4/7) of the patients with CR-BSI were females and the age range was 40-72. 4/7 (57\%) of CR-BSI included patients with neutropenia, defined as having a neutrophil count $< 2.0 \times 10^9$/L. 5/7 (71\%) of CR-BSI included patients diagnosed with metastatic GI illness.
Outbreak Management

There were six outbreaks identified throughout PHSA facilities. Four were at Riverview Hospital and one the other one was at Aurora Centre, a rehabilitation unit for women with addiction issues at BC Women’s. There were no other outbreaks identified at any of the PHSA sites. Although the Pandemic Influenza strain was circulating in the community, we did not have an outbreak of influenza in any of our facilities.

<table>
<thead>
<tr>
<th>Date</th>
<th>Length</th>
<th>Type</th>
<th>Organism</th>
<th>Patient #</th>
<th>Staff #</th>
<th>Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>March. 2010</td>
<td>10 days</td>
<td>Respiratory</td>
<td>hMPV</td>
<td>2</td>
<td>2</td>
<td>Riverview</td>
</tr>
<tr>
<td>March, 2010</td>
<td>12 days</td>
<td>Respiratory</td>
<td>hMPV</td>
<td>6</td>
<td>5</td>
<td>Riverview</td>
</tr>
<tr>
<td>February 2010</td>
<td>15 days</td>
<td>GI</td>
<td>Norovirus</td>
<td>3</td>
<td>0</td>
<td>Women’s</td>
</tr>
<tr>
<td>November, 2009</td>
<td>7 days</td>
<td>Respiratory</td>
<td>Unknown</td>
<td>2</td>
<td>4</td>
<td>Riverview</td>
</tr>
<tr>
<td>September, 2009</td>
<td>1 month</td>
<td>Respiratory</td>
<td>Unknown</td>
<td>4</td>
<td>2</td>
<td>Riverview</td>
</tr>
</tbody>
</table>

GI: Gastrointestinal Infection
hMPV = Human Metapneumovirus
Education

Staff education is a major component in the role of the Infection Control Practitioner (ICPs) at all PHSA sites. Hand hygiene educational sessions were held at all sites. Written and educational materials were provided on pandemic influenza. ICPs) continue to be part of general orientation at all sites. The Infection Prevention and Control Services team is constantly assessing, developing and revising strategies to meet the learning needs of the staff in relation to best practices for infection control.

Members of the PIPCS Service team regularly attend educational sessions, workshops and conferences to expand our knowledge and keep current with best practices of infection control. Examples include:

- CHICA-Canada National Conference
- CNISP Educational Sessions
- Re-Certification from the Certification Board of Infection Control
- Pathology 477 (UBC)
- CHIMPS Rounds, weekly
- PICNet Education Day
- CHICA-BC Education Day
- Clostridium difficile symposium at PHC
- CSA Seminar: Fundamentals of Infection Control during Construction, Renovation or Maintenance of Health Care Facilities
- PICNet Webber Teleclasses
- PICNet Educational Lecture: Reducing the Risk of Surgical Site Infection through a Consilient Evidence-Based Perspective. Dr. Charles E. Edmiston, Medical College of Wisconsin March 24, 2009
- PIPCS Quarterly Meeting Education Session
- FHA Public Health Update H1N1 Open Forum, Oct 22, 2010
- Patient Safety and Learning Systems (PSLS) Training
- BCCA Medical Oncology Rounds, Tuesday Noon
- FHA Medical Rounds, Wednesday Morning
- Provincial Professional Practice Nursing Rounds, monthly
- Queens University Online IC Course- Jan to June 2010
Appendices

Appendix A: HH Report Cards (Example)

Hand Hygiene Compliance Report

ER vs. Children's Hospital Average

<table>
<thead>
<tr>
<th>Season</th>
<th>ER Compliance</th>
<th>Children's Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer 2009</td>
<td>38.0%</td>
<td>63.0%</td>
</tr>
<tr>
<td>Fall 2009 - Winter 2010</td>
<td>46.0%</td>
<td>63.4%</td>
</tr>
<tr>
<td>Spring 2010</td>
<td>74.0%</td>
<td>77.1%</td>
</tr>
</tbody>
</table>

ER Audit 3 (Spring 2010) Breakdown

- Wash: 74.0%
- Soap: 14.0%
- Rub: 8.0%
- Missed: 4.0%

Staff - Your 4 Moments For Hand Hygiene

1. BEFORE Initial Patient/Patient Environment Contact
2. BEFORE Aseptic Procedure
3. AFTER Body Fluid Exposure Risk
4. AFTER Patient/Patient Environment Contact
Appendix B: Surveillance Definitions

**Colonization:** The presence, growth, and multiplication of an organism without observable clinical symptoms or immune reaction. The patient is asymptomatic.

**Infection:** Invasion by and multiplication of a microorganism in body tissue resulting in clinical manifestations of disease.

**VRE case:** Laboratory confirmation of vancomycin-resistant enterococci from specimens indicative of colonization or infection.

**MRSA case:** Laboratory confirmation of methicillin-resistant *Staphylococcus aureus* from specimens indicative of colonization or infection. This includes:
- Cases identified for the first time during their hospital admission to BC Children’s or BC Women’s.
- Cases identified previously at outpatient clinics but currently the patients being admitted to BC Children’s or BC Women’s with positive MRSA isolates.
- Cases identified in the emergency department that are admitted subsequently (during the same day).

This DOES NOT include:
- Cases identified in the emergency department but are not admitted.
- Cases identified in outpatient clinics or other outpatient cases.
- Case re-admitted with MRSA.

**Healthcare-Associated MRSA:** A MRSA case (as defined above) identified greater than 3 calendar days after admission to BC Children’s or BC Women’s, OR a MRSA case identified 3 calendar days or less after admission to BC Children’s or Women’s hospitals, but is related to a previous admission to BC Children’s or BC Women’s within the last 12 months.

**C. difficile Infection (CDI):** Laboratory confirmation (positive toxin or culture with evidence of toxin production) of *Clostridium difficile* in an unformed stool specimen (does not include patients <1 year of age).

**Primary CDI Infection:** The first episode of CDI ever experienced OR a new episode of CDI which occurs more than 8 weeks after the previous toxin-positive assay.

**Continuation of the CDI infection:** The subsequent positive CDI lab result(s) obtained within two weeks following the primary CDI infection.

**Healthcare-Associated CDI:** A CDI case (including primary and relapse CDI cases) with symptom onset greater than 3 calendar days or more after admission to BC Children’s or Women’s hospitals, OR a CDI case with symptom onset in the community or 3 calendar days or less after admission to BC Children’s or Women’s hospitals, provided that symptom onset was less than 8 weeks after the last discharge from BC Children’s or Women’s hospitals.

**Unknown:** A case (including MRSA, VRE or CDI as defined above) where there is insufficient information on recent healthcare exposure to classify as a Healthcare-Associated case or not.
Patient days: Patient days are used as denominators in the calculation of rates to adjust for length of stay. It is calculated by the number of patients admitted at BC Children’s or BC Women’s (counts are usually conducted at midnight) and multiplied by the number of days of hospitalization in a given time period.

Incidence rate of Healthcare-Associated MRSA cases:
Numerator: Number of Healthcare-Associated MRSA cases.
Denominator: The number of patient days (excluding patients in psychiatric beds or with short-term emergency room admissions).

Incidence rate of Healthcare-Associated CDI cases:
Numerator: Number of Healthcare-Associated CDI (primary cases only).
Denominator: The number of patient days (excluding patients in psychiatric beds or with short-term emergency room admissions or less than one year of age).

Fiscal year/period: April 1 to March 31 of the following year.

Gastrointestinal outbreak: Three or more cases of suspected gastroenteritis among patients, residents, or staff, that cannot be explained by admitting diagnoses or by non-infectious causes of symptoms (i.e. recent use of laxatives or stool softeners, chronic diarrhea, etc.), within a four-day period in the same unit or patient care area.

Respiratory outbreak: Two or more cases of influenza-like illness (fever, chills, headache, myalgia, sore throat, cough, nasal congestion, etc.) among patients, residents, or staff within a one-week period in the same unit or patient care area.